

CLAIMS

WHAT IS CLAIMED IS:

1. A method of validating signals and detecting signal leakage in a cable communications system, the cable communications system providing channel programming on a plurality of RF channels, the method comprising the steps of:

- a) tuning a radio frequency receiver to a carrier frequency of a selected RF channel;
- b) measuring a signal level of the carrier frequency;
- c) off-tuning the receiver by a predetermined offset;
- d) measuring a signal level of the off-tuned carrier frequency;
- e) obtaining a signal level difference between the signal level of the carrier frequency and the signal level of the off-tuned carrier frequency to determine if interference exists;
- f) declaring an interference condition if the signal level difference is less than a predetermined difference amount; and
- g) providing an indication of the signal level of the carrier frequency to permit a determination of whether a signal leakage condition exists.

2. The method of claim 1 wherein the steps of measuring are performed by receiving signals corresponding to an existing RF carrier frequency, which signals egress from the cable communications system.

3. The method of claim 1 wherein the steps of measuring are performed passively with no encoding or injecting of test signals into the selected RF channel or modifying the channel programming of the selected channel.

4. The method of claim 1 wherein the steps (a) through (g) are continuously repeated.

5. The method of claim 1 wherein the carrier frequency of the selected RF channel is between 108 MHz and 400 MHz.

6. The method of claim 1 wherein the carrier frequency is within a frequency spectrum designated for use by aircraft communication and aircraft navigation.

7. The method of claim 1 wherein the receiver is off-tuned by between 5 kHz and 100 kHz from a center frequency of the carrier.

8. The method of claim 1 wherein the receiver is off-tuned by between 100 kHz and

1 MHz from a center frequency of the carrier.

9. The method of claim 7 wherein the receiver is off-tuned to a frequency above the center frequency of the carrier.

10. The method of claim 7 wherein the receiver is off-tuned to a frequency below the center frequency of the carrier.

11. The method of claim 1 wherein at least one of the measured signal level of the carrier frequency and the measured signal level of the off-tuned carrier frequency are saved to facilitate obtaining the signal level difference.

12. The method of claim 1 wherein the predetermined difference amount is 3 dB.

13. The method of claim 1 further including the step of validating the carrier frequency measurement if the signal level difference is not less than the predetermined difference amount.

14. The method of claim 1 wherein if the interference condition has not been declared, declaring a signal leakage condition if the signal level of the carrier frequency is greater than a predetermined leakage amount.

15. The method of claim 1 wherein if the interference condition has not been declared, providing an indication of the signal level of the carrier frequency so that a signal leakage condition can be determined.

16. The method of claim 15 wherein the indication of the signal level of the carrier frequency is periodically updated.

17. The method of claim 15 wherein the indication of the signal level of the carrier frequency is updated in real time.

18. The method of claim 1 further including the step of providing an indication of the signal level of the carrier frequency so that a signal leakage condition can be determined.

19. The method of claim 1 wherein the signal leakage condition is determined to exist if the measured signal level of the carrier frequency is greater than the equivalent of 20 microvolts per meter measured at three meters.

20. The method of claim 1 wherein the signal leakage condition is determined to exist if the measured signal level of the carrier frequency is greater than the equivalent of between 5 to 20 microvolts per meter measured at three meters.

21. The method of claim 1 wherein if the interference condition is detected, an alternate RF channel is chosen having a predetermined RF frequency spacing from the selected channel, and steps (a) through (g) are repeated.

22. A method of validating signals and detecting signal leakage in a cable communications system, the cable communications system providing channel programming on a plurality of RF channels, the method comprising:

- a) tuning a radio frequency receiver to a carrier frequency of a selected RF channel;
- b) measuring a signal level of the carrier frequency;
- c) saving the measured signal level of the carrier frequency in memory;
- d) off-tuning the receiver by a predetermined offset;
- e) measuring a signal level of the off-tuned carrier frequency;
- f) saving the measured signal level of the off-tuned carrier frequency in memory;
- g) subtracting the signal level of the off-tuned carrier frequency from the signal level of the carrier frequency to obtain a signal level difference;
- h) declaring an interference condition if the signal level difference is less than a predetermined difference amount; and
- i) displaying the measured signal level of the carrier frequency to permit a determination that a signal leakage condition exists.

23. The method of claim 22 wherein the signal leakage condition is determined to exist if the interference condition is not declared and the measured signal level of the carrier frequency is less than a predetermined leakage amount.

24. A system for validating signals and detecting signal leakage in a cable communications system, the cable communications system providing channel programming on a plurality of RF channels, the system comprising:

a radio frequency receiver;

a computer operatively coupled to the receiver and to a display, the receiver configured to tune to a carrier frequency of a selected RF channel in response to the computer, measure a signal level of the carrier frequency of the selected RF channel, and display the measured signal level on the display;

the computer directing the receiver to off-tune by a predetermined offset and measure a

signal level of the off-tuned carrier frequency; and

wherein the computer calculates a signal level difference between the signal level of the carrier frequency and the signal level of the off-tuned carrier frequency, and declares an interference condition if the signal level difference is less than a predetermined difference amount.

25. The system of claim 24 wherein the carrier frequency of the selected RF channel is between 108 MHz and 400 MHz.

26. The system of claim 24 wherein the receiver is off-tuned by between 5 kHz and 100 kHz from a center frequency of the carrier.

27. The system of claim 24 wherein the receiver is off-tuned by between 100 kHz and 1 MHz from a center frequency of the carrier.

28. The system of claim 24 wherein the receiver is off-tuned to a frequency above or below the center frequency of the carrier.

29. The system of claim 24 wherein the predetermined difference amount is 3 dB.

30. The system of claim 24 wherein if the interference condition has not been declared, the computer provides an indication that a signal leakage condition exists if the signal level of the carrier frequency is greater than a predetermined leakage amount.

31. The system of claim 24 wherein if an interference condition has not been declared, the display provides an indication of the signal level of the carrier frequency so that a signal leakage condition can be determined.

32. The system of claim 24 wherein the signal level of the carrier frequency is periodically updated.

33. The system of claim 24 wherein the computer indicates that a signal leakage condition exists if the measured signal level of the carrier frequency is greater than the equivalent of 20 microvolts per meter measured at three meters.

34. The system of claim 24 wherein the computer indicates that a signal leakage condition exists if the measured signal level of the carrier frequency is greater than the equivalent of between 5 to 20 microvolts per meter measured at three meters.